

**EX PARTE**



---

**United States Telephone Association**

1401 H Street, N.W., Suite 600  
Washington, D.C. 20005-2136  
(202) 326-7300  
(202) 326-7333 FAX

January 20, 1995

Mr. William F. Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street NW - Room 222  
Washington, D.C. 20554

**RECEIVED**

**JAN 20 1995**

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

**RE: Ex Parte Meeting**  
**CC Docket No. 94-1**

DOCKET FILE COPY ORIGINAL

Dear Mr. Caton:

Attached is a copy of the "Productivity of the Local Operating Telephone Companies Subject to Price Cap Regulation, 1993 Update" prepared for USTA by Christensen Associates. This report incorporates 1993 data into the Total Factor Productivity Study by Christensen Associates that was filed as an attachment to USTA's comments in this proceeding. The formula basis and underlying format of the updated LEC TFP study are consistent with the study filed with USTA's comments.

In the process of reviewing and compiling the data to update the study for 1993, it was necessary to modify the results of the original 1984-1992 study used as a base for the update to correct some of the historical data. Generally, the corrections that were made to the input side were the 1984 current cost of gross capital stock figures, capital investment, Telephone Plant Indexes and categorization of some expense dollars between materials and labor. As a result, the average annual input growth has changed from the original 0.9% to 1.0%. On the Output side, corrections were made to the billed revenue series for long distance and intrastate access. As a result of these corrections, the 1984-1992 average annual output growth changed from 3.5% to 3.4%. In sum, the TFP offset changed from 2.6% (3.5 - 0.9) to 2.4% (3.4 - 1.0).

An original and two copies of this ex parte notice and the attached study along with a machine readable disk are being filed in the Office of the Secretary on

No. of Copies rec'd  
List A B C D E

*Oja*

January 20, 1995. Please include this notice and attached material in the public record of these proceedings.

Respectfully submitted,

A handwritten signature in cursive script, reading "Mary McDermott". The signature is written in black ink and is positioned above the printed name and title.

Mary McDermott  
Vice President & General Counsel

cc: Michael Katz  
Mark Uretsky  
Anthony Bush  
Alexander Belinfante

**Productivity of the Local Operating Telephone Companies**

**Subject to Price Cap Regulation**

**1993 Update**

Laurits R. Christensen, Philip E. Schoech,

and Mark E. Meitzen

Christensen Associates

January 16, 1995

## Table of Contents

Section		Page
1	Introduction . . . . .	1
2	Total Output--Methods . . . . .	5
3	Total Input--Methods . . . . .	8
4	Total Output, Total Input, and Total Factor Productivity--Results . . . . .	13
5	Conclusion . . . . .	16

**Productivity of the Local Operating Telephone Companies  
Subject to Price Cap Regulation  
1993 Update**

Laurits R. Christensen, Philip E. Schoech,  
and Mark E. Meitzen  
Christensen Associates  
January 16, 1995

**1. Introduction**

This report updates through 1993 the Total Factor Productivity study of the price cap Local Exchange Carriers (LECs) that Christensen Associates performed for the United States Telephone Association (USTA). Total Factor Productivity (TFP) is the ratio of total output to total input, where total output includes all services provided by the Local Exchange Carriers and total input includes the capital, labor, and materials used to provide those services.<sup>1</sup> The companies included in the study are Ameritech, Bell Atlantic, BellSouth, GTE, NYNEX, Pacific Telesis, Southern New England Telephone, Southwestern Bell, and U S West. The original study covered the period 1984-1992.<sup>2</sup> Data are now available to include 1993 in the study.

The results of the updated study are that over the 1984-1993 period, total output for the price cap LECs grew at a 3.4 percent average annual rate and total input grew at a 1.0 percent average annual rate, resulting in average annual TFP

---

<sup>1</sup>Total output consists of all services included in total operating revenue, as currently defined in the Form M.

<sup>2</sup>"Productivity of the Local Operating Telephone Companies Subject to Price Cap Regulation," Christensen Associates, May 3, 1994. Hereafter referred to as the "1984-1992 study."

growth of 2.4 percent. The productivity offset in the price cap formula is related to the differential in productivity growth between the LECs and the U.S. economy. Given that economy-wide TFP growth has averaged 0.3 percent annually between 1984-1992,<sup>3</sup> LEC post-divestiture TFP growth has exceeded economy-wide TFP growth, with a TFP growth differential of 2.1 percent.

The methodology employed in this study was initially developed for our 1981 study of the Bell System,<sup>3</sup> and subsequently has been applied in studies submitted to and accepted by the public utility commissions in North Dakota, Georgia, Illinois, Ohio, and Indiana. It is based on research conducted by Laurits Christensen and Dale Jorgenson into the measurement of TFP growth in the U.S. economy.<sup>4</sup> The data requirements of the methodology are met with company records and, in fact, most of the required data are filed annually with the Federal Communications Commission.

To measure total output, seven different types of services are distinguished: local service, interstate end user access, interstate switched access, interstate special

---

<sup>3</sup>The economy-wide TFP figure is based on the U.S. Bureau of Labor Statistics' measure of "multifactor" productivity for the private business sector of the U.S. economy. Bureau of Labor Statistics multifactor productivity measures are reported in the BLS publication, Monthly Labor Review.

<sup>3</sup>Laurits R. Christensen, Dianne C. Christensen, and Philip E. Schoech, "Total Factor Productivity in the Bell System, 1947-1979." Christensen Associates, September 1981.

<sup>4</sup>L.R. Christensen and D.W. Jorgenson, "The Measurement of U.S. Real Capital Input, 1929-1967," Review of Income and Wealth, Series 15, December 1969, pp. 293-320; L.R. Christensen and D.W. Jorgenson, "U.S. Real Product and Real Factor Input, 1929-1967," Review of Income and Wealth, Series 16, March 1970, pp. 19-50; and L.R. Christensen and D.W. Jorgenson, "U.S. Income, Savings and Wealth, 1929-1969," Review of Income and Wealth, Series 19, December 1973, pp. 329-362.

access, intrastate access, long distance service, and miscellaneous services. Price changes are factored out of each category's revenues to obtain quantity indexes. The quantity indexes for the revenue categories are aggregated into an overall output quantity index.

The weights used in the computation of the output index are the revenue shares of the services contained in the index. For purposes of determining the productivity offset in a price cap formula, this is the proper specification for the output index. By employing the revenue weighted output index, prices paid by LEC customers can be linked to changes in input price inflation and changes in TFP.<sup>5</sup> Proper specification of the output index is important because changes in output growth are directly related to changes in TFP growth.<sup>6</sup>

Total input is comprised of capital (plant and equipment), labor, and materials (purchased materials, rents, and services). To construct a quantity index of total input, we first construct separate quantity indexes for capital, labor, and materials. The capital, labor, and materials quantity indexes are then aggregated into an overall input quantity index with cost shares serving as the weights for the input categories.

To measure capital input, six asset classes are distinguished: buildings, general support equipment, central office equipment (including operator systems), transmission equipment, information origination/termination equipment, and cable and

---

<sup>5</sup>This relationship is formally presented in Appendix 1 of the 1984-1992 study.

<sup>6</sup>Chapter 2 of the 1984-1992 study explores in detail the relationship between output growth and TFP growth.

wire. Quantity indexes and annualized costs are calculated for each of the asset classes; then an overall quantity index of total capital input is computed from the asset classes, with their cost shares used as weights.

Labor input is the time spent by LEC employees in providing services to LEC customers. It does not include the time spent installing plant and equipment, since this time is included in the capital input measure. Two groups of employees are distinguished in the study: management and non-management. The quantity index of labor input is an index of management and non-management hours worked, with management and non-management labor cost shares used as weights.

The cost of materials is equal to total operating expense less depreciation and payments to labor. Since this category is comprised of a diverse set of inputs, the U.S. Gross Domestic Product Price Index (GDPPI) is used to represent the price of materials. The quantity index of materials is obtained by dividing materials cost by its price.

Section 2 describes the methods to calculate total output. Section 3 describes the methods to calculate total input. In Section 4, we present the annual figures for total output, total input, and Total Factor Productivity for 1984-1993. Most of the data used in the computations come either from the Form M annual reports filed with the FCC or were supplied to us directly by the LECs. We have reviewed all data to ensure that they are reasonable and appropriate.<sup>7</sup>

---

<sup>7</sup>It should be noted that in addition to obtaining 1993 data for the study update, some data were revised by the participating companies for the 1984-1992 period.



## **2. Total Output--Methods**

The Local Exchange Carriers provide a variety of telecommunications services; consequently LEC output cannot be adequately measured using simple physical indicators such as access lines, number of calls, or minutes of use. To properly measure output, different types of LEC services must be distinguished, and for each service category, price and quantity indexes must be developed that accurately represent the complexity and diversity of telephone operations. We measure seven major categories of services: local service, interstate end user access, interstate switched access, interstate special access, intrastate access, long distance service, and miscellaneous services. For each of these service categories, a price index is constructed to represent price changes that occurred during the study period. The price indexes are used to factor price changes out of each service category's revenues, yielding an output quantity index for each service category.

### Output by Category

The company Form M annual reports show booked revenue for each of the service categories listed above. When using these data, it is important to make adjustments for changes in accounting definitions. In particular, the mandated accounting revisions in 1988 must be addressed.<sup>8</sup> The primary difference between reported operating revenue through 1987 and reported operating revenue beginning

---

<sup>8</sup>This is the Uniform System of Accounts Rewrite, or USOAR, which was mandated by the FCC and implemented in 1988.

in 1988 is revenue from certain nonregulated services. Beginning in 1988, all revenue from nonregulated services that had joint and common costs with regulated services were reported in operating revenue. Before 1988 this was not the case. The LECs provided Christensen Associates with adjustments to the Form M booked revenues for the 1984-1987 period in order to put revenues from the two periods (1984-1987 and 1988-1993) on a consistent accounting basis. These adjustments apply to the miscellaneous services category.

Price indexes for local service, intrastate access, and long distance service are constructed from the price change information reported by the LECs in the Form M.<sup>9</sup> In the Form M, the LECs report the impact of rate changes in terms of changes in revenue. The methodology we use converts the dollar change in revenue to a percentage change in the overall rate level. These percentage changes in rate levels are then used to construct a price index.<sup>10</sup>

Because the interstate access rate change information filed in the Form M is not as comprehensive as the information filed by the companies for intrastate price changes, other methods are used to construct price indexes for interstate end user access, interstate switched access, and interstate special access. The price index for

---

<sup>9</sup>Form M price change information for the entire 1984-1993 period was available for Ameritech, Bell Atlantic, Bell South, NYNEX, Pacific Telesis, Southern New England, Southwestern Bell, and U S West. This information was used to construct the price indexes for local, intrastate access, and long distance service in this study.

<sup>10</sup>Appendix 2 of the 1984-1992 report provides a detailed description of this methodology.

interstate end user access is computed as the ratio of end user access revenue to the number of access lines, where both revenue and access lines are taken from the Form M report. To compute a price index for interstate switched access, a quantity index is first computed. This quantity index is a Tornqvist<sup>11</sup> index of LEC common line minutes of use and traffic sensitive minutes of use, where carrier common line and traffic sensitive revenues are used as weights. Once the quantity index is computed, the price index is obtained by dividing booked revenue by the quantity index. Finally, a special access price index is developed from LEC data on prices for special access services.

For local service, interstate end user access, interstate switched access, and interstate special access, the quantity indexes are obtained by dividing booked revenue by the corresponding price index. For intrastate access and long distance service, a different approach is necessary. The reason is that the price indexes represent the prices paid by customers, while the revenue represents the revenue received by the companies. Because of the settlements process, the revenue received by the company does not equal the amount paid by the customer. Consequently, we obtain quantity indexes for these services by dividing billed revenue by the corresponding price index.<sup>12</sup>

---

<sup>11</sup>The Tornqvist index determines the rate of growth of a quantity index by weighting the growth of each of the services in the index by each service's revenue share.

<sup>12</sup>As noted above, the price index for interstate access is constructed using booked revenues. In this case, revenue and price indexes both represent the revenue received by the companies.

Since miscellaneous services represents a wide variety of activities, the U.S. Gross Domestic Product Price Index (GDPPI) is used as the price index for this category. The quantity index for miscellaneous services is obtained by dividing adjusted booked revenue by the GDPPI.

### Total Output

The quantity indexes for the revenue categories are aggregated using the Tornqvist index. The index produces an overall rate of growth in total output by weighting the growth rates for each revenue category. The weights used in the computation are the revenue shares of the categories, where the adjusted revenues described above are used in constructing the weights.

### **3. Total Input--Methods**

Total input is comprised of capital (plant and equipment), labor, and materials, rents, and services (hereafter referred to as materials). To construct a quantity index of total input, quantity indexes for capital, labor, and materials are constructed. The capital, labor, and materials quantity indexes are then aggregated using the Tornqvist index to obtain the quantity index of total input, with cost shares serving as the weights for the various categories.

## Capital

The quantity and cost of capital input is based on the Christensen-Jorgenson methodology.<sup>13</sup> Six asset classes are distinguished: buildings, general support equipment, central office equipment (including operator systems), transmission equipment, information origination/termination equipment, and cable and wire. The quantity of capital stock is calculated for each asset class using the perpetual inventory capital stock equation, which has the form:

$$K_t = (1 - \delta) \cdot K_{t-1} + I_t \quad (1.1)$$

where

$K_t$	=	the quantity of capital stock at the end of year t
$I_t$	=	the quantity of investment during year t
$\delta$	=	the economic rate of replacement.

The economic rates of replacement used in the study are taken from Jorgenson.<sup>14</sup> The rates are: 15.5% for general support equipment, 11.0% for central office equipment, transmission equipment, and information origination/termination equipment, and 2.3% for buildings and cable and wire. The quantities of investment are obtained by dividing the value of investment by the corresponding investment price deflators, also known as Telephone Plant Indexes. The LECs provided Telephone Plant Indexes for each of the asset classes, for each

---

<sup>13</sup>See Christensen and Jorgenson, 1969.

<sup>14</sup>D.W. Jorgenson, "Productivity and Economic Growth," in E.R. Berndt and J.E. Triplett, eds., Fifty Years of Economic Measurement (Chicago: University of Chicago Press, 1990), pp. 19-118.

year. The values of additions to plant are based on data reported in the Form M, which need to be adjusted for the USOAR accounting changes. The primary accounting change affecting the measurement of capital occurs in 1988. Starting in 1988, some expenditures that had previously been reported as additions to plant were now required to be reported as operating expense. In 1988, operating expense for the LECs increased by \$2.1 billion because of these accounting changes. This figure was used as the basis for adjusting reported gross additions for the 1984-1987 period.

A starting value, or benchmark, for K must be calculated in order to apply the perpetual inventory capital stock equation. We calculate a 1984 benchmark for each asset class, based on the 1984 replacement cost as provided by the LECs. This 1984 replacement cost is a "current cost of gross plant" measure. That is, assets of different vintages are repriced to provide a common basis of valuation. It is necessary to adjust the replacement cost for the age distribution of the assets. The U.S. Bureau of Economic Analysis reports the age distribution of the relevant assets for the telecommunications industry. This industry age distribution of plant and equipment is used to derive the LEC age distribution of plant and equipment. The LEC age distribution is then used to obtain a benchmark value for each asset class. Finally, an adjustment for USOAR is also necessary for the benchmark, since the data underlying the benchmark estimate are based on the pre-USOAR accounting standards.

Once the quantity indexes are computed for each of the asset classes, they must be aggregated into an overall capital input index. The weights used to aggregate

the asset classes are the annual capital costs of each asset class (also referred to as the "implicit rental" costs). The annual cost of capital services for each asset class is calculated using the Christensen-Jorgenson methodology and includes four components: (1) the opportunity cost of the capital held in the form of plant and equipment; (2) plus cost of declines in efficiency of plant and equipment; (3) less the economic revaluation of plant and equipment; (4) plus the cost of property taxes and profits taxes.<sup>15</sup>

For each of the asset classes, the four components of annual capital costs are calculated as follows. First, the opportunity cost of the capital held in the form of plant and equipment is calculated by multiplying the current economic value of plant and equipment by the appropriate interest rate. The current economic value of plant and equipment is obtained by multiplying the quantity of the capital stock by the relevant Telephone Plant Index. The interest rate used as the opportunity cost is Moody's Composite Yield on Public Utility Bonds. Second, the cost of declines in efficiency is obtained by multiplying the economic rates of efficiency decline by the

---

<sup>15</sup>See Christensen and Jorgenson, 1969. The Christensen-Jorgenson formula for the implicit rental price is:

$$v_t = [(1 - u \cdot z - k)/(1 - u)] \cdot [r_t \cdot p_{t-1} + \delta \cdot p_t - (p_t - p_{t-1})] + r \cdot p_t,$$

where  $u$  is the rate of taxation on income,  $z$  is the present value of tax depreciation allowances,  $k$  is the investment tax credit rate,  $r$  is the interest rate (Moody's yield on public utility bonds),  $p$  is the Telephone Plant Index,  $\delta$  is the rate of economic replacement (representing the declines in efficiency), and  $r$  is the rate of property taxation. The income tax rate, the property tax rate, and the investment tax credit rate are based on income taxes, property taxes, and investment tax credits reported by the LECs in the Form M report. The present values of tax depreciation allowances are based on the tax lifetimes and depreciation formulas specified by law.

current economic value of plant and equipment. Third, the economic revaluation of plant and equipment is obtained by multiplying the quantity of capital stock by the change in the relevant Telephone Plant Index. Fourth, the cost of property and profits taxes is based on taxes reported in the Form M.

Once the quantity indexes and costs are calculated for each of the asset classes, the quantity index of total capital input is computed as a Tornqvist index of the asset classes, with their capital service costs as weights. The total cost of capital input is equal to the sum of the costs for the six asset classes.

### Labor

Labor input includes the time spent by LEC employees in providing services to LEC customers. It does not include the time installing plant and equipment, since this input is included in the capital input measure. Two groups of employees are distinguished in the TFP study: management and non-management.

The cost of labor input is equal to expensed wages and salaries plus expensed benefits. The total cost of labor is reported in the Form M report. The LECs provided us with a breakdown of labor costs into management and non-management labor costs. The LECs also provided to us total management hours worked and non-management hours worked. The quantity index of labor input is a Tornqvist index of management and non-management hours worked, with management and non-management labor costs used as weights.



### Materials, Rents, and Services (Materials)

The cost of materials is equal to total operating expense less depreciation and payments to labor. This information is reported in the Form M. Since the materials data are based on data filed in the Form M, adjustments must be made for the USOAR accounting changes. The two major changes affecting materials are the treatment of nonregulated activities (discussed in our previous section on output) and the shifting of expenditures from the plant and equipment account to the operating expense account (discussed in our previous section on capital input). The LECs provided us the necessary adjustment figures. The Gross Domestic Product Price Index is used to represent the price of materials, since this category is comprised of a diverse set of inputs. The quantity index of materials is obtained by dividing materials cost by its price.

#### **4. Total Output, Total Input, and Total Factor Productivity--Results**

The index of TFP is computed as the ratio of the quantity index of total output to the quantity index of total input. Equivalently, the rate of growth of TFP is computed as the rate of growth of the quantity index of total output minus the rate of growth of the quantity index of total input.

Table 1 shows the quantity index of total output, the quantity index of total input, and the TFP index. Also shown are the annual rates of growth in total output, total input, and TFP. Over the 1984-1993 period, total output grew at an average

annual rate of 3.4 percent,<sup>16</sup> total input grew at an average annual rate of 1.0 percent, and TFP grew at an average annual rate of 2.4 percent.

---

<sup>16</sup>All percent growth rates that we report are computed using natural logarithms. For example, for the average annual growth of output between 1984-1993,  $3.4\% = ((\ln 1.359 - \ln 1.000)/9) \times 100$ .

**Table 1**

**Local Exchange Carrier Total Factor Productivity**

	<u>Total Output Index</u>	<u>Total Output Growth Rate</u>	<u>Total Input Index</u>	<u>Total Input Growth Rate</u>	<u>TFP Index</u>	<u>TFP Growth Rate</u>
1984	1.000		1.000		1.000	
1985	1.024	2.4%	1.013	1.3%	1.011	1.1%
1986	1.056	3.0%	1.015	0.2%	1.040	2.8%
1987	1.096	3.7%	1.035	1.9%	1.059	1.8%
1988	1.154	5.2%	1.067	3.1%	1.082	2.1%
1989	1.211	4.8%	1.097	2.7%	1.104	2.0%
1990	1.257	3.7%	1.087	-0.9%	1.156	4.6%
1991	1.286	2.3%	1.099	1.1%	1.170	1.2%
1992	1.311	1.9%	1.082	-1.6%	1.212	3.5%
1993	1.359	3.6%	1.093	1.0%	1.244	2.6%
Average Growth 1984-93		3.4%		1.0%		2.4%

## 5. Conclusion

What are the implications for these results for the price cap productivity offset? Conceptually, the productivity offset in the price cap formula is related to the differential in productivity growth achieved by the price cap local exchange carriers and the U.S. economy. The U.S. Bureau of Labor Statistics regularly publishes TFP growth for major sectors of the U.S. economy.<sup>17</sup> The most comprehensive TFP measure published by the Bureau of Labor Statistics is for the private business sector. Currently, the TFP index for the private business sector is available through 1992. The average annual rate of growth for the private business sector between 1984 and 1992 was 0.3 percent. Thus, the TFP growth differential between the LECs and the private business sector between 1984-1992 was 2.1 percent. If it is assumed that the average annual rate of growth for the private business sector remains at 0.3 percent for the 1984-1993 period, this implies the TFP growth differential is also 2.1 percent between 1984-1993.

---

<sup>17</sup>The Bureau of Labor Statistics refers to its TFP measures as "multifactor" productivity. These measures are reported in the Bureau of Labor Statistics publication, Monthly Labor Review. The BLS does not currently publish multifactor productivity for the LECs.

I. Capital Input Analysis Without Aital/Expense Shift

CURRENT DOLLAR INVESTMENT

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Gen Support Equipment	1,594,280	1,708,847	1,685,237	1,719,132	2,096,071	2,047,018	2,064,677	1,980,971	2,018,917	1,939,307
Central Office	3,665,597	5,341,401	5,380,105	4,856,902	4,812,589	4,106,151	4,399,576	4,175,098	4,478,869	4,351,057
Transmission	3,071,454	3,702,382	3,768,591	4,005,469	3,663,330	3,219,798	3,455,150	3,725,903	3,852,853	4,204,571
Information Orig/Term	54,555	611,593	524,801	571,512	405,900	412,330	422,637	419,707	438,935	472,038
Cable & Wire	5,897,921	5,303,358	5,234,388	5,147,206	4,878,559	4,871,967	5,546,633	5,631,574	5,606,209	5,561,553
Buildings	843,722	1,058,948	903,765	745,065	662,964	703,532	846,880	823,964	924,255	792,400
TOTAL	15,127,529	17,726,529	17,496,888	17,045,285	16,519,412	15,360,797	16,735,553	16,757,217	17,320,038	17,320,875

ASSET PRICES

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Gen Support Equipment	1.000	0.993	0.974	0.987	1.013	1.003	0.988	0.905	0.843	0.803
Central Office	1.000	0.995	0.972	0.981	0.964	0.965	0.967	0.955	0.927	0.955
Transmission	1.000	1.048	1.066	1.074	1.036	1.053	1.064	1.080	1.074	1.097
Information Orig/Term	1.000	1.041	1.072	1.054	1.074	1.096	1.105	1.103	1.094	1.122
Cable & Wire	1.000	1.012	1.014	1.020	1.070	1.134	1.138	1.155	1.145	1.145
Buildings	1.000	1.028	1.054	1.076	1.115	1.139	1.179	1.211	1.241	1.287

## COMPOSITE LABOR DATA

		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MANAGEMENT	# OF EMPLOYEES	182,289	170,347	160,074	157,940	151,338	149,703	138,337	131,574	120,626	110,968
	WAGES, SALARIES	6,428,352,422	6,446,865,578	6,286,410,956	6,537,191,465	6,398,659,751	6,644,993,412	6,294,407,856	6,320,981,250	5,979,953,823	6,089,538,651
	BENEFITS	1,693,644,938	1,658,414,597	1,601,390,832	1,478,472,537	1,563,475,601	1,588,643,730	1,535,352,850	1,822,094,650	1,777,973,430	2,434,597,532
	TOTAL COMP	8,121,997,360	8,105,280,175	7,887,801,787	8,015,664,003	7,962,135,351	8,233,637,141	7,829,760,706	8,143,075,900	7,757,927,253	8,524,136,184
	HOURS	300,488,571	280,275,667	259,793,760	255,677,671	258,457,129	261,384,235	229,589,485	220,061,122	203,707,494	195,248,536
NONMANAGEMENT	# OF EMPLOYEES	480,127	452,484	437,124	436,804	428,549	422,377	404,497	396,656	384,442	365,502
	WAGES, SALARIES	11,090,799,317	11,127,059,057	11,040,414,064	11,228,383,794	11,296,565,622	11,090,775,225	11,642,262,972	11,445,629,488	11,732,617,079	11,823,992,349
	BENEFITS	3,200,762,676	3,108,356,588	2,999,229,505	2,623,794,458	2,760,612,308	2,779,402,859	2,998,447,680	3,517,248,248	3,450,357,318	4,451,724,468
	TOTAL COMP	14,291,561,993	14,235,415,646	14,039,643,570	13,852,178,251	14,057,177,931	13,870,178,085	14,640,710,652	14,962,877,736	15,182,974,397	16,275,716,816
	HOURS	781,930,548	743,143,723	692,744,696	705,040,266	714,633,889	685,738,143	679,443,477	665,712,466	639,261,496	632,639,068
TOTAL COMPENSATION		22,413,559,353	22,340,695,821	21,927,445,357	21,867,842,254	22,019,313,282	22,103,815,226	22,470,471,358	23,105,953,636	22,940,901,651	24,799,853,000

Composite Expense Data  
(Millions of Dollars)

Year	Depreciation	Labor	Services	Materials	Rents	Total
1984	\$10,265,689,748	22,413,559,353	4,495,625,732	5,237,462,371	1,343,619,297	43,755,956,501
1985	\$11,817,980,828	22,340,695,821	5,230,444,585	5,311,177,514	1,523,069,503	46,223,368,251
1986	\$13,615,786,710	21,927,445,357	6,052,079,753	5,228,845,728	1,289,691,939	48,113,849,487
1987	\$15,478,125,567	21,867,842,254	6,325,079,902	4,813,975,473	1,077,258,884	49,562,282,080
1988	\$15,848,891,000	22,019,313,282	7,404,883,055	7,926,299,218	1,168,166,445	54,367,553,000
1989	\$16,105,368,000	22,103,815,226	8,949,271,737	8,235,372,232	1,159,904,805	56,553,732,000
1990	\$16,237,730,000	22,470,471,358	8,981,521,609	8,651,562,574	1,187,602,459	57,528,888,000
1991	\$15,758,422,000	23,105,953,636	9,977,390,961	8,870,661,199	1,148,176,204	58,860,604,000
1992	\$16,085,868,000	22,940,901,651	8,858,615,401	9,433,336,948	1,211,614,000	58,530,336,000
1993	\$16,421,727,000	24,799,853,000	11,616,889,928	7,383,777,072	1,226,589,000	61,448,836,000

Operating Revenues

	Composite (000)									
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Local	28,849,107	30,589,731	32,361,398	32,735,373	32,684,393	33,453,940	34,512,828	35,950,646	37,420,938	39,093,644
Intersate Access										
End User	612,763	1,678,437	2,707,396	3,501,265	4,074,431	4,991,358	5,307,141	5,477,774	5,629,936	5,976,718
Switched	12,543,714	12,604,240	12,129,158	11,289,167	11,428,553	10,795,895	10,192,553	10,083,865	10,207,635	10,547,770
Special	2,103,858	2,103,988	2,744,216	2,845,024	2,766,891	2,473,426	2,434,221	2,337,239	2,375,499	2,316,636
Intrastate Access	4,788,749	5,128,208	5,158,972	5,289,774	5,387,318	5,411,128	5,531,853	5,613,291	5,769,455	6,049,613
Toll (Total)	10,539,375	10,654,774	11,362,760	12,006,235	12,846,252	13,004,172	12,923,549	12,358,912	11,902,761	12,039,418
Miscellaneous (Total)	7,142,088	6,614,035	5,606,855	5,017,635	7,274,024	7,741,898	7,889,680	8,244,883	7,817,687	8,236,826
Total	65,002,692	68,894,397	71,549,440	72,044,383	75,816,676	77,150,619	78,016,517	79,128,087	80,163,044	84,260,625
Adjustments										
Nonreg	233,737	403,412	457,377	1,101,956						
Special Access Adjust	1,113,144									
Billed Revenue Totals										
Intrastate Access	\$5,474,682	\$5,836,196	\$5,795,047	\$5,844,936	\$5,928,083	\$5,938,211	\$5,838,884	\$5,891,410	\$5,787,328	\$5,942,668
Toll	\$11,101,053	\$10,954,864	\$11,716,681	\$12,390,283	\$13,013,853	\$13,344,224	\$13,183,984	\$12,579,895	\$12,083,024	\$11,863,507



Rate Changes for Intrastate Price Indexes  
LOCAL REVENUES – RBOCS + SNET

YEAR	CREDIT AMOUNTS	BOOKED REVENUE	ANNUALIZED REV CHANGE	EFFECTIVE REV CHANGE
1984	(\$11,236,014)	\$25,775,420,158	\$2,078,331,648	\$1,170,046,419
1985	(\$1,192,853)	\$27,477,280,341	\$901,047,575	\$362,731,700
1986	(\$39,352,533)	\$29,134,054,309	\$318,709,182	\$306,435,486
1987	(\$175,772,961)	\$29,629,046,820	(\$196,226,863)	(\$62,235,584)
1988	(\$58,661,601)	\$29,650,767,000	(\$260,782,783)	(\$171,010,729)
1989	(\$99,362,953)	\$30,420,331,000	(\$420,744,910)	(\$351,230,657)
1990	(\$54,057,123)	\$31,146,843,000	(\$673,225,668)	(\$635,913,651)
1991	(\$20,996,874)	\$32,550,606,000	\$334,053,316	\$349,531,090
1992	(\$26,691,378)	\$33,861,723,000	(\$157,882,230)	(\$61,609,825)
1993	(\$12,299,000)	\$35,143,442,000	\$197,774,080	\$137,826,429

TOLL REVENUES – RBOCS + SNET

YEAR	CREDIT AMOUNTS	BOOKED REVENUE	ANNUALIZED REV CHANGE	EFFECTIVE REV CHANGE
1984	(\$800,000)	\$9,013,834,991	\$120,897,298	\$73,941,319
1985	\$453,030	\$9,020,026,345	\$119,551,899	\$56,632,837
1986	(\$320,872)	\$9,558,748,223	(\$128,974,020)	(\$90,300,983)
1987	(\$34,086,939)	\$10,230,953,016	(\$309,414,790)	(\$162,072,343)
1988	(\$4,208,968)	\$11,036,637,000	(\$181,892,907)	(\$100,227,289)
1989	(\$8,556,568)	\$10,931,507,000	(\$481,389,470)	(\$380,554,000)
1990	\$19,797,000	\$10,940,640,000	(\$624,540,658)	(\$279,359,270)
1991	\$0	\$10,426,330,000	(\$34,597,098)	(\$12,642,366)
1992	\$0	\$10,081,703,000	(\$203,553,850)	(\$133,379,094)
1993	(\$1,500,000)	\$10,191,364,000	(\$236,456,957)	(\$138,851,447)

INTRASTATE ACCESS REVENUES – RBOCS + SNET

YEAR	CREDIT AMOUNTS	BOOKED REVENUE	ANNUALIZED REV CHANGE	EFFECTIVE REV CHANGE
1984	(\$83,411,000)	\$4,144,967,541	\$733,557,303	\$504,734,470
1985	\$0	\$4,321,440,649	(\$112,536,352)	(\$37,555,828)
1986	\$330,000	\$4,301,715,129	(\$107,185,704)	(\$75,394,442)
1987	(\$37,103,600)	\$4,277,223,581	(\$238,013,773)	(\$195,789,742)
1988	(\$181,850)	\$4,326,751,000	(\$111,038,913)	(\$82,313,419)
1989	(\$1,829,535)	\$4,318,962,000	(\$154,087,164)	(\$96,076,094)
1990	(\$14,860,000)	\$4,437,204,000	(\$337,289,830)	(\$110,650,020)
1991	(\$91,054,750)	\$4,460,023,000	(\$91,054,750)	(\$56,230,318)
1992	(\$3,053,622)	\$4,512,028,000	(\$160,531,818)	(\$90,092,803)
1993	(\$1,430,000)	\$4,655,729,000	(\$233,629,723)	(\$98,470,455)